

In the claims:

Please cancel claims 1-10.

Please amend claims 11-19, as follows:

(Original) 11. An apparatus for treating subsurface water comprises:

a well having a casing with an inlet screen and outlet screen to promote a recirculation of water into the casing and through surrounding ground area.

at least one microporous diffuser disposed in the injection well that allows delivery of a first and second fluids with one of the fluids forming a coating over the other of the fluids;

an ozone generator;

an air compressor and compressor/pump control mechanism to deliver ozone (O₃) from the ozone generator to the microporous diffuser as one of the fluids;

a source of the liquid hydroperoxides selected from the group consisting of formic peracid, hydroxymethyl hydroperoxide, 1-hydroxylethyl hydroperoxide, and chloroformic peracid or their derivatives; and

a feed mechanism to deliver the selected liquid hydroperoxide to the microporous diffuser as the second one of the fluids.

(Original) 12. The apparatus of claim 11 wherein the feed mechanism is a pump.

(Original) 13. The apparatus of claim 11 wherein air ozone is delivered to a central inner chamber of the microporous diffuser and the liquid hydroperoxide is delivered to an outer chamber of the microporous diffuser.

(Original) 14. The apparatus of claim 11 wherein the microporous diffuser has a porosity characteristic that permits bubbles of 5-200 microns diameter to be released into the surrounding formation.

(Currently Amended) 15. An apparatus for treating subsurface water comprises:
an sparging apparatus that is disposed through a soil formation, the sparging apparatus comprising:

a microporous diffuser positioned through a bore hole disposed through the soil formation or is of a type that is injected into the soil formation;
a treatment control system comprising:
an air compressor that feeds a mixture of air/ozone into the microporous diffuser and
a feed mechanism to supply to the diffuser a liquid decontamination agent comprising a hydroperoxide.

(Original) 16. The sparging apparatus of claim 15 wherein the microporous diffuser is disposed through a vadose zone and an underlying aquifer in the soil formation.

(Original) 17. The sparging apparatus of claim 15 wherein the microporous diffuser is coupled to appropriate piping to connect sources of decontamination agents to the microporous diffuser.

(Original) 18. The sparging apparatus of claim 15 wherein when fluid is injected through the microporous diffuser the microporous diffuser enables a water pattern to evolved about diffuser where light bubbles tend to travel upwards and heavier bubbles tend to travel downwards.

(Original) 19. The apparatus of claim 15 wherein the microporous diffuser has a porosity characteristic that permits bubbles of 5-200 microns diameter to be released into the surrounding formation.

Please add claims 20-37.

(New) 20. The apparatus of claim 11 wherein the microporous diffuser has a porosity characteristic that permits bubbles in a range of 50 to 200 microns to be released into the surrounding formation.

(New) 21. The apparatus of claim 11 wherein the microporous diffuser has a porosity characteristic that permits bubbles in a range of 1 to 50 microns to be released into the surrounding formation.

(New) 22. The apparatus of claim 11 wherein the microporous diffuser has a porosity characteristic that permits bubbles in a range of 1 to 20 microns to be released into the surrounding formation.

(New) 23. The apparatus of claim 11 wherein the peroxide acid coating reacts with the aromatic rings of such compounds to break the rings into fragments that partition from a liquid to gas phase bringing them even more rapidly into contact with the gaseous ozone content.

(New) 24. The apparatus of claim 11 wherein the organic hydroperoxides are injected with the laminated microporous diffusers as a coating for the microporous emulsions.

(New) 25. The apparatus of claim 11 wherein Typical conditions for the air/ozone flow are as follows air 3-5 CFM, ozone 144-430 gm/day, hydroperoxide 5-50 gal/day.

(New) 26. The apparatus of claim 11 wherein typical conditions for the air/ozone flow are a percent concentration of hydroperoxide in water in a range of (2-20) percent.

(New) 27. The apparatus of claim 11 wherein the hydroperoxide as a coating on the microbubbles serves to mitigate other competing reactions that can occur when chlorinated olefins double bonded carbon atoms are attacked by the ozone as chlorinated olefins enter the microbubbles.

(New) 28. The apparatus of claim 15 wherein the hydroperoxide are intermediary products in reactions involving chlorinated olefins and ozone.

(New) 29. The apparatus of claim 15 wherein the hydroperoxide are selected from the group consisting of formic peracid, hydrogen peroxide, hydroxymethyl hydroperoxide, 1-hydroxymethyl hydroperoxide, and chloroformic peracid.

(New) 30. The apparatus of claim 15 wherein the hydroperoxide as a coating on the microbubbles serves to mitigate other competing reactions that can occur when chlorinated olefins double bonded carbon atoms are attacked by the ozone as chlorinated olefins enter the microbubbles.

(New) 31. The apparatus of claim 15 wherein the microporous diffuser has a porosity characteristic that permits bubbles in a range of 50 to 200 microns to be released into the surrounding formation.

(New) 32. The apparatus of claim 15 wherein the microporous diffuser has a porosity characteristic that permits bubbles in a range of 1 to 50 microns to be released into the surrounding formation.

(New) 33. The apparatus of claim 15 wherein the microporous diffuser has a porosity characteristic that permits bubbles in a range of 1 to 20 microns to be released into the surrounding formation.

(New) 34. The apparatus of claim 15 wherein the peroxide acid coating reacts with the aromatic rings of such compounds to break the rings into fragments that partition from a liquid to gas phase bringing them even more rapidly into contact with the gaseous ozone content.

(New) 35. The apparatus of claim 15 wherein the organic hydroperoxides are injected with the laminated microporous diffusers as a coating for the microporous emulsions.

(New) 36. The apparatus of claim 15 wherein typical conditions for the air/ozone flow are air flow of 3-5 CFM, ozone 144-430 gms/day, and hydroperoxide 5-50 gal/day.

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(New) 37. The apparatus of claim 15 wherein a percent concentration of hydroperoxide in water is in a range of (2-20) percent.